

Reines and Cowan experiment. Result

$\bar{\nu}_e + p \rightarrow n + e^+$, wait few μs , $n + {}^{108}\text{Cd} \rightarrow {}^{109}\text{Cd} + \gamma$

Detect e^+ and γ in sequence to reduce background.

There was 200 kg of water. 1.3×10^{28} free protons.

Detector was placed 11 m from the reactor and 12 m deep.

Observed ~ 3 events per hour.

Confirmed by turning the reactor off.

$$10^{13} \text{cm}^{-2} \text{s}^{-1} \times 3600 \text{s} \times 6 \times 10^{-44} \text{cm}^2 \times 1.3 \times 10^{28} \text{protons} \times \sim 0.1$$

Nobel prize for Reines in 1995.